REMARKS

Entry of the foregoing, and consideration of the subject matter identified in caption, as amended pursuant to 37 C.F.R. §1.111, and in light of the remarks which follow are respectfully requested.

As correctly noted in the Office Action Summary, claims 1-12 are pending in the application and are under consideration. By the above amendments, the claim 1 has been revised to more clearly recite the conditioning of the target prior to its use.

Claims 1, and 3-8 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Dunlop et al (U.S. Patent No. 6,030,514) in view of Marton et al (U.S. Patent Application Publication 2003/0059640 A1). The claims, as amended, cannot be rejected on this basis.

Based on a complete understanding of the present invention, it is respectfully submitted that the claims cannot properly be rejected under §103(a) based on the teachings of Dunlop et al and Marton et al. The combination of features set forth in independent claim 1, are simply not disclosed or suggested by the applied documents.

The present invention relates to a method of dry treating a sputtering target to achieve an enhanced finish on the surface that effectively reduces burn-in time of the target by at least 10% as compared to an untreated target.

Dunlop et al relates to a method of reducing sputtering conditioning time or so called burn-in and a target assembly thereof. Col. 1 lines 6-9. For example, Dunlop et al does not disclose or fairly suggest preparing the surface of a sputter target by energizing the magnetic component of the magnetron sputtering apparatus with a power between about 0.2 kW and about 4 kW for a period of time between about 4 and about 30 minutes to produce a surface dry treatment of a sputtering ion plasma on an exposed surface of the target to effectively reduce inherently undesirable impurities on the exposed surface, thereby reducing the subsequent burn-in time by at least 10% as compared to an untreated target prior to its utilization in the a deposition process. Recognizing this deficiency, the Official Action relies on Marton et al for allegedly disclosing the processing

conditions of the target conditioning, much less to a point where 10% of the burn-in time has been reduced by 10%.

Marton et al relates to shape memory and superelastic alloys and vacuum deposited metallic materials. Specifically, Marton et al is directed to nickel-based alloys fabricated by vacuum deposition technologies, and which exhibit shape memory effect and/or superelastic behavior. Page 1, second paragraph. Marton et al, however, does not teach or fairly suggests conditioning dedicated regions of a sputter target surface prior to the burn-in. Instead the conditioning treatment is indeed the burn-in part of the process. In other words, Marton et al does not disclose the conditioning of the system as a separate and discrete step, prior to performing a deposition process. In this regard, Marton et al discloses the entire target as being exposed to the plasma, with a dummy substrate therein. See page 7, paragraph 74. Furthermore, the exposure to the plasma during the target conditioning is a burn-in step within the deposition process. See page 7, paragraph 67 et al. Thus, clearly one of ordinary skill in the art would not look to combine the disclosures of Dunlop et al with that of Marton et al, due to the disparate nature of the disclosures (i.e., the preparation of the target). Furthermore, the conditioning of Marton et al does not aim to nor achieves a 10% reduction to the burn-in time. Therefore, for at least the foregoing reasons, withdrawal of this rejection is in order and it is respectfully requested.

Claim 2 stands rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Dunlop et al in view of Marton et al and further in view of Ding et al (U.S. Patent Application Publication 2003/0089601). This rejection is traversed.

Dunlop et al and Marton et al have been discussed in detail above. Ding et al relates Ding et al disclose an array of auxiliary magnets positioned along sidewalls of a magnetron sputter reactor on a side towards the wafer from the target. See Abstract. Ding et al has been applied for allegedly disclosing a sputtering apparatus including a rotating magnetron system "comprises less than 180 arc". See Official Action at page 4.

Ding et al simply does not cure the deficiencies in either of Dunlop et al or Marton et al. Specifically, Ding et al does not disclose or fairly suggest conditioning of the target as a separate and discrete step, prior to packaging and shipping the target for subsequent use in a deposition process. Thus, even if combined in the manner suggested, one of ordinary skill in the art would not arrive at the claimed invention.

Claims 9 stands rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Dunlop et al in view of Morton et al and further in view of Arai et al (U.S. Patent No. 6,187,457). This rejection is traversed for the following reasons.

Dunlop et al and Morton et al have been discussed above. Arai et al relates to an electroluminescent light emitting device using an organic compound in which an electron injecting electrode for supplying electrons to a light emitting layer is provided thereon with a sealing film. See Col. 1, lines 5-11. Arai et al has been applied for allegedly disclosing the use of FeNdB magnet. However, Arai et al does not even concern a magnetic component to be utilized in a sputtering system, much less cure the deficiencies in Dunlop et al and Morton et al. Thus, withdrawal of this rejection is respectfully requested.

Claim 10-12 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dunlop et al in view of Morton et al and further in view of Pavate et al (U.S. Patent No. 6,001,227). This rejection is traversed for the following reasons.

In accordance with the Official Action, Dunlop et al allegedly implies "placing the target in a sputtering chamber and burning-in the target." Official Action at page 7. As discussed above, Dunlop et al does not even remotely discuss the particular steps taken to surface treat the target before its utilization in a deposition process, much less the reduction of burn-in time by at least 10%, as presently claimed. Pavate et al has been relied on for the purportedly curing the deficiencies in Dunlop et al and Morton et al for allegedly "explicitly teach surface treatment and packaging." Official Action at page 7. This statement is only correct to the extent that surface treatment is performed prior to packaging

the target and ultimately using same. In this regard, Morton only teaches a surface treatment step 306 by polishing, and cleaning of the target ultrasonically prior to packaging so as to remove any surface roughness that may result in arcing. See col. 11, lns. 46-63. Thus, clearly Morton does not teach the steps of creating a plasma to clean the surface, based on the claimed parameters, nor does it disclose a reduction in the burn-in time by at least 10% as compared to an untreated target. Accordingly, even if combined in the manner suggested by the Examiner one of ordinary skill in the art would not arrive at the claimed invention. Withdrawal of this rejection is in order and it is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If there are any questions concerning this paper, or the application in general, the Examiner is invited to telephone the undersigned at his or her earliest convenience.

Respectfully submitted,

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